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INVESTIGATION AND MANAGEMENT OF A CLUSTER OF TB INFECTION IN A NURSING HOME

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Purpose: Tuberculosis (TB) in the nursing home is an increasing problem in Taiwan. Detecting and diagnosing TB is challenging as the manifestations are not obvious in elders. Along with the growing elders' population and the increase of long-term care facilities, more emphasis should be placed on TB detection and prevention.

Methods: March 2012, in midland of Taiwan, two nursing home residents persistently coughed and their sputum samples were collected and cultured. Six weeks later, both residents were reported *Mycobacterium tuberculosis* and were diagnosed TB. The doctor subsequently informed the Centers for Disease Control (CDC) following the mandatory communicable disease procedure. We found the infected residents lived next door at the same floor of the nursing home, thus the possibility of TB cluster can't be excluded. The infection control measures were immediately taken as follows: 1. Transferring both residents to isolated hospital wards and accepted the anti-TB drug treatment. 2. Listing the list of contact persons including 36 residents and 19 health care workers, and arrange them to take the chest X-ray. 3. Sending their sputum samples to CDC and make a genotyping matching.

Results: May 5 2012, the results of genotyping matching by CDC showed the two TB strains were different illustrated it is not a TB cluster in the nursing home. And all contacts were normal.

Conclusions: Advices were made after discussion of this incident such as: 1. Providing the report of chest X-ray within 3 month before moving to long-term care facilities. 2. Educating lessons of TB prevention, and remind the health care workers take the residents to OPD when they had the symptoms of cough over 5 days. 3. Always wear mask during working. 4. All residents and health care workers should take annual chest X-ray examination.

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USE IMMEDIATELY ALARM SYSTEM TO FOLLOW UP THE TUBERCULOSIS PATIENTS AFTER ANTI-TB MEDICATIONS TREATMENT

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Background: TB patients may develop fatal adverse reactions after anti-TB medications treatment. The TB treatment guideline, published from Taiwan CDC, suggests that TB patients should receive blood biochemical test to avoid these adverse responses. However, these data delayed to be notified frequently by routine reported systems.

Objective: To evaluate whether a new reported system, immediately information alarm system, for abnormal laboratory data to prevent side effects in TB treatment.

Methods: The immediately information alarm system included these components; 1. TB patients must receive GOT, GPT, total bilirubin, direct bilirubin, creatine, uric acid and complete blood cell count before the TB treatment and in 2nd, 4th, and 8th week after treatment. 2. At outpatient department, TB patients, without any one of the claimed data within 7 days, the information system would automatically show up those items for examination. 3. The abnormal test data were notified by short message to physicians and TB case managers immediately. 4. The physicians would evaluate these data to avoid side effects and the case manager would contact the TB patient for medical education.

Results: From March 1, 2013 to February 28, 2014, 161 TB patients with 504 abnormal test data were notified by short message to physicians and TB case managers immediately; included 204 (40.5%) abnormal renal function test, 84 (17.5%) abnormal liver function test, and 84 (16.7%) abnormal uric acid data. Among these patients, total 43 patients (26.7%) with 24 abnormal uric acid (56%), liver dysfunction, 16 (37%), and renal dysfunction 3 (7%) were informed immediately to adjust the anti-TB medications.

Conclusion: Forty-three patients (26.7%) were informed via this immediately alarm system to prevent fatal outcome. This system may benefit to TB patients to reduce side effects after treatment effectively and complete the treatment course for TB patients.

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COMPARISON OF THE INCIDENCE OF ADVERSE EVENTS AT THE DIFFERENT PERIODS OF ANTI-TUBERCULOSIS TREATMENT IN A REGIONAL HOSPITAL IN SOUTH TAIWAN

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Purpose: The side effects of anti-tuberculosis drugs are not uncommon in patients with tuberculosis (TB). Furthermore, anti-TB treatment will last at least six months. The adverse events (AEs) may occur at any time during the course of anti-TB treatment. However, there are few studies about the most likely time that AEs happen. Thus, we analyze the incidence of AEs among the different periods of anti-TB treatment.

Methods: We conducted a study from January 1, 2013 to December 31, 2013 in a regional hospital in South Taiwan. We retrospectively collected AEs during the course of anti-TB treatment. The patients with pulmonary or extrapulmonary TB were included except multiple-drug-resistant TB. We divided the duration of anti-TB treatment into five periods. These five periods were the durations of the first week, the second week, from the third week to the fourth week, from the fifth week to 60th day and from 61th day to the day of complete treatment, respectively. We calculated the incidence of AEs at these five periods.

Results: Eighty-three patients were eligible in this study. The incidence of AEs was 48.2% during the complete course of anti-TB treatment. The highest incidence of AEs among these five periods occurred in the third period (25.3%). There was no significant difference in the incidence of AEs between the patients older than 65 and 65 or younger. The incidence of AEs didn't significantly differ between the patients with pulmonary TB and extrapulmonary TB.

Conclusions: This study showed that the highest incidence of AEs occurred at the period of the third week and the fourth week. Although AEs may occur at any time during the course of anti-TB treatment, we should take more care of the patients taking anti-TB drugs in this period.

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SERIAL TESTING OF INTERFERON-GAMMA RELEASE ASSAY FOR DIAGNOSIS OF TUBERCULOSIS IN HIV-INFECTED ADULTS

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Purpose: To determine the usefulness of interferon-gamma release assay (IGRA) in serial testing for predicting development of active tuberculosis in HIV-infected adults.

Methods: A prospective, cohort study enrolled HIV-infected adults in one medical center and one regional hospital in Southern Taiwan. QuantiFERON-TB Gold (QFT, N=802) and in-tube test (QFT-IT, N=303) was done at baseline and serial testing performed at 6-12 months intervals using QFT in 310, and QFT-IT in 68 subjects.

Results: 927 HIV-infected adults entered the study, 892 men and 35 women, with a mean age of 36.9 years (range 20.0-77.2 years), including men-who-have-sex-with-men (27.9%), heterosexual (9.3%) and intravenous drug users (61.8%). The median CD4 count was 473 cells/uL, with 6.8% CD4<200, and 73.6% CD4>=350. The median log HIV viral load was 3.46 copies/mL, and viral suppression was achieved in 60.0% and 72.7% of MSMs and heterosexuals, respectively, and 5.3% in IDUs due to differential uptake of antiretrovirals. Lower CD4 cell counts (<200cells/uL) affected the performance of QFT resulting in lower positive rates and higher indeterminate rates (10.9%), but not QFT-IT. QFT conversion occurred in 19 (6.1%) and reversion in 32 (10.3%). QFT-IT conversion was found in 4 (5.9%) and reversions in 3 (4.4%). The conversion rate of QFT and QFT-IT was 0.429 and 0.343 per 100 person-months, respectively. The study subjects were followed up for a median of 7.23

person-years, and 21 developed active TB. Conversion did not predict active TB using both QFT (5.5% vs 2.6%, $p=0.47$) (Hazard ratio (HR): 1.89, 95% CI: 0.25-14.11, $p=0.53$) and QFT-IT (0.0% vs 1.6%, $p=1.00$).

Conclusions: In HIV-infected adults, QuantiFERON tests may be useful for serial testing in those with CD4 cell counts over 200 cells/uL. Low rates of QFT/QFT-IT conversions indicate either improved immunity associated with antiretroviral therapy and/or reduced exposure to TB in the community. The significance of conversions and reversions require further longitudinal study.

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THE SUSCEPTIBILITY OF KINDERGARTEN AND HIGH SCHOOL TEACHERS TO MEASLES AND TEACHER COGNITION OF MEASLES

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Purpose: In Japan, routine measles vaccination had taken place once prior to 2005. The country experienced measles outbreaks primarily in adults due to secondary vaccine failure. In schools, there are concerns about potential outbreaks of measles originating from school faculty. Thus, this study sought to estimate the prevalence of measles antibodies in kindergarten and high school teachers and to ascertain teachers' cognition of measles.

Methods: Six hundred and twelve kindergarten teachers and 1,145 high school teachers were selected via random sampling from 4 prefectures and major metropolitan areas. Teachers who consented to participate in this study completed a self-administered questionnaire. This study was approved (approval no. 14047) by the Ethics Committee of the institution where the authors work.

Results: The response rate was 37.9%. Based on their responses, 72.1% of kindergarten teachers and 74.8% of high school teachers were deemed to be susceptible to measles. Compared to high school teachers, kindergarten teachers had a significantly higher ($p<0.05$) rate of immunity. A significantly higher ($p<0.05$) number of kindergarten teachers responded that "teachers should receive required vaccinations." A significantly higher ($p<0.05$) number of high school teachers responded that "teachers should develop a natural immunity to measles."

Conclusions: Kindergarten and high school teachers both had a low rate of immunity to measles, which is presumably the result of their limited cognition of this disease. Thus, prompt educational intervention is needed. Many high school teachers in particular are members of an age group that did not receive routine measles vaccinations or that received only a single vaccination. This is surmised to be the reason for their low rate of immunity to measles, and administrative directives are essential to remedying this situation.

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COMPARISON OF THE COMPLETION RATE OF POST-EXPOSURE RABIES VACCINATION REGIMEN BETWEEN TWO PERIODS IN A REGIONAL HOSPITAL IN SOUTH TAIWAN

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Purpose: Domestic human hydrophobia and domestic animal rabies in Taiwan have not been reported since 1959 and 1961, respectively. However, reemerge of animal rabies (ferret-badger) in Taiwan was confirmed in 2013 July. Therefore, the centers for disease control, Taiwan, provided the policy of 5-dose rabies vaccination regimen for post-exposure prophylaxis (PEP). In the beginning, the government offered free rabies vaccines from 2013 July. Since 2014, the rabies vaccine had been included in the scope of national health insurance payment. The aim of this study was to analyze the completion rate of 5-dose rabies vaccination regimen.

Methods: We retrospectively reviewed the medical records of patients receiving PEP in a regional hospital from 2013 July to 2014 September. We categorized them to two periods. The patients got free rabies vaccines offered by the government from July to December in 2013. The others got vaccinated against rabies by national health insurance payment from January to September in 2014. We compared the completion rate of 5-dose rabies vaccination regimen for PEP in these two periods.

Results: There were 223 patients vaccinated against rabies in the first period and 123 patients received rabies vaccination in the second period. The completion rates of 5-dose rabies vaccination regimen for PEP in these two periods were 91.5% and 57.7%, respectively. There was a statistically significant difference of completion rate of 5-dose rabies vaccination regimen between these two periods ($p < 0.0001$).

Conclusions: The higher completion rate of 5-dose rabies vaccination regimen for PEP is in the first period but the lower one is in the second period. Thus, we should provide the more intact strategy to elevate the completion rate of 5-dose rabies vaccination regimen for PEP in the future.